National Textile University

Department of Computer Science

Subject:

Operating System

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5^{th}- A

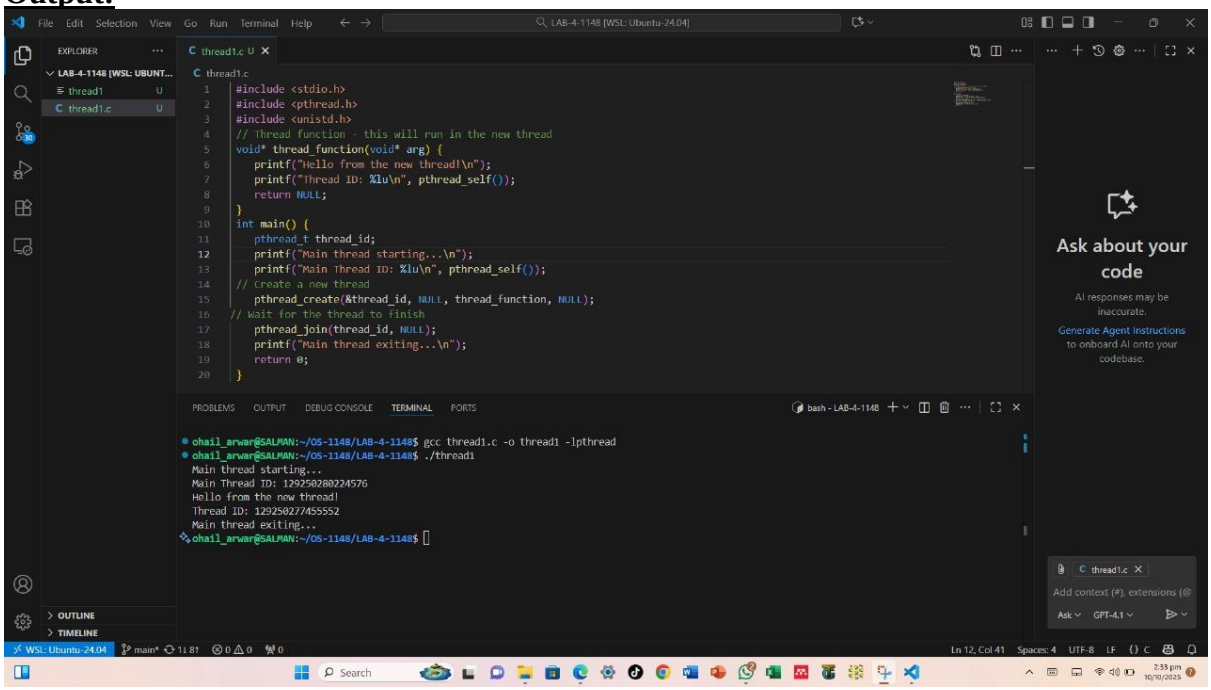
LAB-04: Introduction to Threads

Program 1: Creating a Simple Thread

Code:

```
#include <stdio.h>
 #include <pthread.h>
 #include <unistd.h>
 // Thread function - this will run in the new thread
 void* thread_function(void* arg) {
    printf("Hello from the new thread!\n");
    printf("Thread ID: %lu\n", pthread_self());
    return NULL;
 }
 int main() {
    pthread_t thread_id;
    printf("Main thread starting...\n");
    printf("Main Thread ID: %lu\n", pthread_self());
 // Create a new thread
    pthread_create(&thread_id, NULL, thread_function, NULL);
// Wait for the thread to finish
    pthread_join(thread_id, NULL);
    printf("Main thread exiting...\n");
    return 0;
 }
```

Output:



Program 2: Passing Arguments to Threads

Code:

```
#include <stdio.h>
 #include <pthread.h>
 void* print_number(void* arg) {
```

```
// We know that we've passed an integer pointer
    int num = *(int*)arg; // Cast void* back to int*
    printf("Thread received number: %d\n", num);
    printf("Square: %d\n", num * num);
    return NULL;
 }
 int main() {
    pthread_t thread_id;
    int number = 42;
    printf("Creating thread with argument: %d\n", number);
 // Pass address of 'number' to thread
    pthread_create(&thread_id, NULL, print_number, &number);
    pthread_join(thread_id, NULL);
    printf("Main thread done.\n");
    return 0;
 }
```

Output: